



Challenges in Agricultural Health and Safety

The world-famous “City by the Bay” with its distinct and appealing character, home of Fisherman’s Wharf, Union Square, Golden Gate Park, Chinatown, Nob Hill, as well as numerous restaurants, galleries and theaters, provided the perfect setting for this year’s West Coast agricultural health and safety conference.

Sponsored by the Western Center for Agricultural Health & Safety, the Pacific Northwest Agricultural Safety and Health Center, the Center for Occupational and Environmental Health, and the National Institute for Occupational Safety and Health, “Challenges in Agricultural Health and Safety” drew 120 participants from 13 American states, and Sydney, Australia.

The conference began on Sept. 7 with optional tours of Viansa Winery and Italian Marketplace in Sonoma, and Artesa Vineyards & Winery in Napa. Ten conference participants enjoyed lunch and winetasting at Viansa, as well as a visit to Napa’s new and architecturally acclaimed Artesa—a winery and an art gallery.

On Monday, Sept. 8, the formal program began at 8:30 a.m. with introductions and overviews by NIOSH agricultural safety and health center directors Marc Schenker

(see **Conference** on page 2)



1. Marc Schenker & Stephen Olenchok
2. Richard Fenske
3. Kathy Ponce & Gale Perez
4. Anne Katten & Hector Hernandez
5. Pat O'Connor-Marer



Photo highlights of “Challenges in Agricultural Health and Safety,” held in San Francisco Sept. 7–9. The conference drew 120 participants from 13 American States, and Sydney, Australia.

Photography by Kim Indresano

Study finds trellis height influences MSD risks in vineyards

A study of five different trellises used in California vineyards has shown that one trellis—the popular VSP (vertical shoot positioning)—protects workers best against developing musculoskeletal disorders (MSD) of the wrist and lower back while pruning.

Center investigator Fadi Fathallah and Andrew Kato, then a graduate student in the Agricultural Ergonomics Research Center at UC Davis, evaluated five trellis systems commonly used in the Napa and Sonoma Valleys to learn which, if any, would minimize MSD risk factors such as repetitive forceful hand and shoulder motion, sustained forward bending, overextension, and other awkward body postures.

In the first study ever to quantitatively measure trunk posture and wrist motion during simulated pruning activities, Kato and Fathallah tracked the movements of skilled vineyard workers as they pruned actual branches embedded in foam at heights where the branches would be cut during actual pruning.

(see **Trellis** on page 4)

Conference *from page 1*

(WCAHS) and Richard Fenske (PNASH), and Senior Scientist for Agricultural Research Stephen Olenchok of NIOSH in Morgantown, WV.

The meeting planners divided the conference program into five thematic sessions, with several presentations on current agricultural health and safety research, intervention, and outreach activities related to each theme, including:

Session I: Respiratory Disease in Western Agriculture

Session II: Farm Families and Life-Cycle Health Issues

Session III: Minority and Farm Worker Health Issues

Session IV: Agricultural Injuries and Ergonomics

Session V: Policy and Regulatory Issues in Agriculture

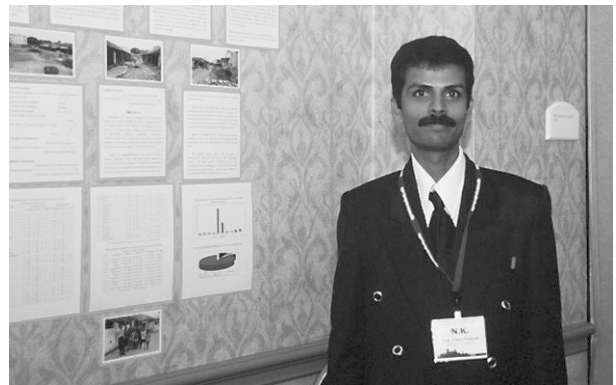
A committee of representatives from both agricultural health and safety centers planned the conference program over the past year, and members of the two centers served as co-moderators for each



Dr. Stephen McCurdy, professor, UC Davis Department of Epidemiology and Preventive Medicine, presented "Epidemiologic Perspective of Agricultural Injuries."

of the thematic sessions. This is the second conference on agricultural health and safety issues held jointly by the two western centers. Last year, hosted by the Pacific Northwest Center, the meeting was held in Coeur d'Alene, Idaho.

One of the unique highlights of the conference was the breakfast roundtable discussions that were held at 7 a.m. on Monday and Tuesday mornings. Discussion topics included limited-resource farmers, pesticide issues, the California-Mexico Health Initiative, organized labor, regulations for protecting workers, agricultural dusts, Spanish-language media, and monkeypox and rural zoonotic diseases. Each table was hosted by a well-known authority on the topic area. "Although the early hour made for long days for conference participants,



U.K. Udaya Prakash presented a poster titled, "Airborne Molds: Exposure Level of Farmers in a Cattle Farm House in Chennai, India."

the informal discussions at eight different tables each morning provided participants opportunities to network with colleagues who share similar interests," said Patrick O'Connor-Marer, deputy director of the Western Center and conference chairman.

"The 27 posters presented at the conference were another highlight of the meeting," O'Connor-Marer reported. Several posters were presented by researchers and students from California and Washington. In addition, the University of New South Wales, Sydney, Australia, was represented by Usha Garg with a poster titled "Chemical



The Western Center for Agricultural Health & Safety poster display.

Management Practices on Farms in New South Wales." Larry Olsen of Michigan State University, East Lansing, presented "Outreach and Coalition Building for Agricultural Safety and Health in Michigan," and N.K. Prakash Udaya of Omni Environmental Inc., Austin, TX, presented his findings in a poster titled "Airborne Molds: Exposure Level of Farmers in a Cattle Farm House in Chennai, India."



Conference participants, from left, Sabina F. Swift, University of Hawaii, and Usha R. Garg, University of South Wales, Sydney Australia.

Student posters were judged by a five-member panel. Criteria used by the judges included the scientific merit of the work, the student's role in the work presented, the pertinence of the work to agricultural health and safety, the timeliness of the work in relation to current agricultural issues, and the clarity, completeness, and appearance of the presentation. The judges selected the poster presented by Tamara Hennessy, a graduate student in the Department of Epidemiology and Preventive Medicine, UC Davis, as the one best meeting these criteria among the eight student posters. Tamara's work is titled "Occupational and Environmental Risk Factors for Self-Reported Respiratory Symptoms among Agricultural Workers in Costa Rica."

According to the Western Center Director Marc Schenker "the support and generous financial assistance we received from many different organizations made this conference possible and we are grateful to these organizations for their help. Some of this financial support allowed us to provide

scholarships for students and others who would otherwise not be able to attend the conference." The following organizations co-sponsored and supported this year's conference:

California Department of Health Services

California Department of Industrial Relations—Cal OSHA

**California Department of Pesticide Regulation
CDC/Agency for Toxic Substances and Disease
Registry (ATSDR)**

Crompton Corporation—Uniroyal Chemical

**NIEHS Center for Environmental Health Sciences
at UC Davis**

North American Agromedicine Consortium

State Fund Insurance Company

**UC Davis College of Agricultural and Environmental
Sciences**

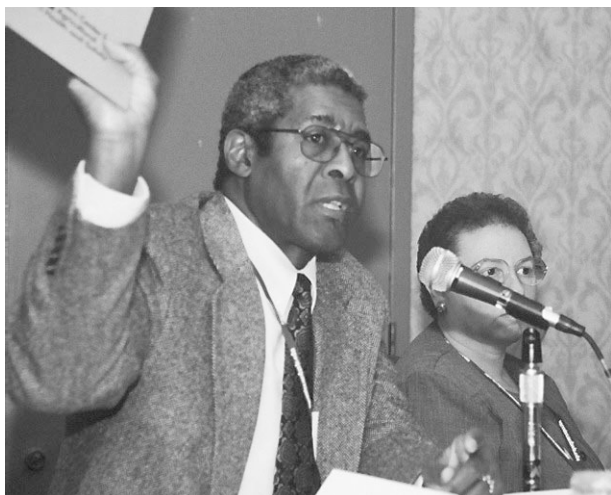
UC Davis School of Medicine

UC Statewide Integrated Pest Management Program

The Zenith Insurance Company



UC Davis graduate student Tamara Hennessy presented a poster titled "Occupational and Environmental Risk Factors for Self-Reported Respiratory Symptoms Among Agricultural Workers in Costa Rica."



Desmond Jolly (left) and Pamela Elkind.

Photographs taken at the conference and speaker presentation abstracts, along with their PowerPoint slides, are posted on the WCAHS Web site at http://agcenter.ucdavis.edu/Announce/AgChallenges2003_Agenda.php.

The next jointly sponsored conference of WCAHS and PNASH, titled "Cultivating a Sustainable Agricultural Workplace," will take place Sept. 12–14, 2004 in Portland, Oregon. The Pacific Northwest Agricultural Safety and Health Center, located in Seattle, will host this conference.

Conference photography by Kim Indresano

Trellis *from page 1*

The workers wore a Motion Analysis System, which captured information about wrist motion, and a Lumbar Motion Monitor that tracked their body motion



The VSP system required the least bending or extension of the left wrist and the least forward bending, helping workers maintain an upright, neutral body position to a greater extent than the other systems.

on three planes, including forward bending. They pruned branches attached to five standard trellis systems that ranged in height from two to four feet off the ground. In addition to measuring the workers' wrist and trunk movement, Fathallah and Kato asked them to rank the trellis systems for bodily discomfort. Their subjective response—a clear preference for the VSP system—corroborated the quantitative findings.

Workers in California's burgeoning wine industry suffer from a high prevalence of work-related MSDs—80 cases per 1,000 workers. The most common and most costly injuries involve the lower back and upper extremities. Pruning requires long periods of physically demanding, highly repetitive work. With a grant from

the National Institute for Occupational Safety and Health (NIOSH), Fathallah and Kato undertook their research to help the industry select trellis systems that might improve worker health.

"Height dictates the difference in risk levels and comfort," Fathallah said. "We found that only a few inches can be significant. It's tricky, because of the small difference, and it's hard to pick up visually, which is why gathering quantitative data is so important. You might think intuitively that the highest system would work best, because it requires the least bending, but our quantitative results showed that the workers were extending their back while pruning branches using the highest system, which isn't good either. They corroborated these findings by telling us that they were most uncomfortable with the systems at the extreme—the very lowest and the very highest."

VSP SYSTEM

At a height of 42 inches, the VSP system required the least bending or extension of the left wrist and the least forward bending, helping workers maintain an upright, neutral body position to a greater extent than the other systems.

"It is fortunate that the VSP is the most widely used system in the Napa and Sonoma Valleys," said Fathallah, who hopes to get the word out to the industry that, when the time comes to replant old vineyards, using the VSP is a good choice for worker health and safety.

Other researchers involved in the project included John Miles, Julia Faucett, Jim Meyers and Ira Janowitz.

Fathallah and his graduate students recently found similar results after analyzing data on

harvesting grape clusters; the VSP was best in terms of maintaining the most upright posture.

For more information, you may contact Fathallah by e-mail at fathallah@ucdavis.edu.

NIOSH TRAINING GRANT

Fathallah not only conducts ergonomic research in agriculture, he also is dedicated to improving the methodology and the instrumentation available for ergonomic research. With support from a NIOSH Pilot Research Training Award for young investigators, he recently completed a study to assess the accuracy of a newly developed, commercially available portable device for measuring forward bending in the workplace. The study showed that the device, BackTalk, could be a useful research tool for quantifying the frequency and level of bending among industrial workers; however, Fathallah found that the device does not give accurate readings in situations where the worker is moving very fast or making moves involving small (15 degree) angles.

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Don Villarejo—his roots are in research

Although he refers to himself as “retired,” Don Villarejo doesn’t fit *Merriam Webster’s* definition of retirement as “conclusion of one’s working or professional career.” He’s more inspired than retired.

Villarejo technically retired as co-founder and executive director of the California Institute for Rural Studies (CIRS) on June 30, 1999, after serving the Institute for 22 years. His wife Merna, a UC Davis professor of microbiology, retired on the same day, and the couple took a year off to travel, visit with their children and grandchildren, and to do some “deferred maintenance for both the house and life,” says Villarejo with a chuckle.



Before leaving CIRS, Villarejo had co-authored “Suffering in Silence: A Report on the Health of California’s Agricultural Workers,” a project funded by the California Endowment. A Spanish translation of the 40-page report was produced, as well as Spanish and English language versions of a four-page research brief, summarizing the key findings of the detailed report.

“The report turned out to be quite influential, and the California Endowment invested an additional \$50 million for interventions to address some of the problems identified in the findings,” says Villarejo. “David Lighthall [Villarejo’s successor as executive director of CIRS] deserves an enormous amount of credit for seeing the project through.”

The report covered field research performed in seven Central Valley communities. “After doing work on the report I wanted to return to each of the seven communities with the findings and give them the opportunity to question me and to question the findings,” says Villarejo. “I wanted it to be an open discussion.” Within a year, he succeeded in visiting and organizing open community meetings in each of the seven communities involved in the study.

The Endowment also selected Villarejo to serve on its advisory committee called the CEO Task Force on Agricultural Worker Health. A report released in 2001, titled “The Bounty of Food: The Poverty of Health,” documents recommendations by Villarejo and other Task Force members, which included numerous other statewide advocates for agricultural worker health. The report is available

for download through the California Endowment’s Web site at www.calendow.org (from the home page of calendow.org, click on “Publications & Reports” and the “Agricultural Worker Health” links).

After resuming part-time activities on July 1, 2000, Villarejo became involved in several other projects, including a request by representatives of the California Department of Industrial Relations to write a research paper on current employment issues in California. Villarejo completed the paper, titled “Who’s in Charge? Labor Market Intermediaries in California Employment,” last March.

“The report examines everything from farm labor contractors to temp agencies, to the many different forms of outsourcing that have drawn significant public attention,” says Villarejo. The report should be available soon through the Department of Industrial Relations’ Web site at www.dir.ca.gov.

In addition to giving talks at agricultural health and safety seminars and conferences, in late 2001 and early 2002 Villarejo conducted training for attorneys and field staff members of the Agriculture Labor Relations Board—a job he had also performed during the early 1980s.

“Following that, the general counsel asked me to do some special investigations for them. I’ve conducted five investigations in the last year-and-a-half,” said Villarejo. “The cases typically involve ‘successorships’—in other words, a firm goes out of business and another firm takes over the business. My job is to help determine the chain of derivative liability (responsibility in issues pertaining to responsibility and liability) of the successor firm.”

While he no longer has the responsibility of personnel issues, grant proposals or balancing the budget, Villarejo remains very busy. At the Center’s September conference in San Francisco, Villarejo presented a talk titled “What Role Does Education Have in Improving the Health of Hired Farm Workers?” A week later he and Merna began a three-week trip to China. In October, he’s scheduled to speak at the International Symposium on Agricultural Medicine in the City of Saskatoon, Saskatchewan, Canada. And more engagements undoubtedly will follow.

Along with these projects, he managed to write the first-ever review article on hired farm worker health published in the *Annual Review of Public Health* (Vol. 24, pp. 175-93, 2003).

Don Villarejo is anything but retired!

CALENDAR

November 7, 12:10–1p.m.,
TB 137, UC Davis Campus
How Much Does the Government Underestimate the Number of Non-Fatal Occupational Injuries within All Industries Combined and Within Agriculture?

J. Paul Leigh, Professor of
Epidemiology & Preventive Med.

December 5, 12:10–1p.m.,
TB 137, UC Davis Campus
Using Laboratory Reports of Cholinesterase Test Results for Illness Tracking

Rupali Das, M.D., M.P.H., Calif.
Dept. of Health Services

For a more complete schedule of events, visit

<http://agcenter.ucdavis.edu>

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News & Notes

CENTER INVESTIGATORS SET THE STANDARD

You may be aware that California recently approved nine clinical laboratories to conduct tests that will better flag potential health effects from pesticides in agricultural employees who mix, load, and apply such chemicals. You may not be aware that the new methods used in these tests were developed through innovative university research that was partially supported by the NIOSH-funded Western Center for Agricultural Health and Safety (WCAHS). The research first found, five years ago, that test methods then used by labs under state rules to measure the biomarker cholinesterase (ChE) in the blood of pesticide-exposed workers did not provide optimal results and were not comparable from lab to lab. As a result, the state changed its rules to require that tests be consistent, and that

conversion factors be developed. In subsequent work, the university researchers devised the improved procedure now used, along with a new standard to help in comparing lab results. WCAHS investigator Barry Wilson, Ph.D., led the research in partnership with his colleagues, students, and others in state agencies.

NASD RECEIVES ACCOLADES

The National Agricultural Safety Database (NASD) recently received an Educational Aids Blue Ribbon Award from the American Society of Agricultural Engineers. NASD was selected from entries in the web page category. The competition encourages agricultural engineers in industry and public service to strive for excellence in extension activities through the interchange of ideas on successful methods and techniques. NASD is a large, comprehensive collection of health, safety and injury prevention materials for the agricultural community. The University of Florida, through funding from NIOSH, developed

and maintains the database. For more information on NASD, visit <http://www.cdc.gov/niosh/nasd.html>.

NORA UPDATE

For those wishing to learn more about the National Occupational Research Agenda (NORA), the 2003 NORA Update is now available. The NORA Update provides the latest on NORA-related research efforts including a timeline of NORA events, newly published documents related to the NORA priority areas, upcoming NORA workshops and special NORA research initiatives. Additionally, highlights from the NORA Intramural and Extramural projects and a comprehensive list of the 2001 through 2003 Awardees are included.

For more information on NORA, visit the NIOSH website <http://www2.cdc.gov/nora/default.html>. To access the online version of the NORA Update, visit the Web site, <http://www.cdc.gov/niosh/docs/2003-148>.